9) On line 27, of the "PRIORITY BENEFIT AND CROSS REFERENCE TO RELATED APPLICATIONS," section added by the Preliminary Amendment, filed March 16, 2001, replace "Serial No. 09/________________" with --United States Patent Application Serial No. 09/810,201,--.

9) On line 30, of the "PRIORITY BENEFIT AND CROSS REFERENCE TO RELATED APPLICATIONS," section added by the Preliminary Amendment, filed March 16, 2001, delete "(Attorney Docket No. 11321-P029US),".

10) After the "PRIORITY BENEFIT AND CROSS REFERENCE TO RELATED APPLICATIONS," section added by the Preliminary Amendment, filed March 16, 2001, and before the "BACKGROUND OF INVENTION," (page 1, line 5, of the Application) insert:

GOVERNMENT GRANTS

This invention was made with United States Government support under United States Grant No. NAGW-4004 and Grant No. DMR-9522251 awarded by the National Aeronautical and Space Administration – Jet Propulsion Laboratory and the National Science Foundation, respectively. The United States Government may have certain rights in the invention.

REMARKS

Attached hereto are clean copies of the PRIORITY BENEFIT AND CROSS REFERENCE TO RELATED APPLICATIONS section and the GOVERNMENT GRANT section, as reflected above. A clean copy of the claims as amended by the Preliminary Amendment, filed March 16, 2001, is further attached.

Respectfully submitted,

Date: May 29, 2001

Ross Spencer Garsson
Reg. No. 38,150
Winstead Sechrest & Minick P.C.
100 Congress Avenue, Suite 800
Austin, Texas 78701
(512) 370-2870 (voice)
(512) 370-2850 (fax)
ATTORNEY FOR APPLICANTS

PRIORITY BENEFIT AND CROSS REFERENCE TO RELATED APPLICATIONS

This Application claims priority benefits to International Application No. PCT/US 99/21366, filed September 1999, which application claims priority benefits to United States Patent Application Nos. (1) 60/101,092, filed September 18, 1998; (2) 60/106,918 filed November 3, 1998; and (3) 60/138,505, filed June 10, 1999, all of which are hereby incorporated by reference.

The present invention is related to the following corresponding U.S. Patent Applications, all of which are divisionals of the Application:

United States Patent Application Serial No. 09/810,390, "CHEMICAL DERIVATIZATION OF SINGLE-WALL CARBON NANOTUBES TO FACILITATE SOLVATION THEREOF; AND USE OF DERIVATIZED NANOTUBES TO FORM CATALYST-CONTAINING SEED MATERIALS FOR USE IN MAKING CARBON FIBERS" to Margraves et al., filed concurrent to the date of this Application;

United States Patent Application Serial No. 09/809,885, "CHEMICAL DERIVATIZATION OF SINGLE-WALL CARBON NANOTUBES TO FACILITATE SOLVATION THEREOF; AND USE OF DERIVATIZED NANOTUBES TO FORM CATALYST-CONTAINING SEED MATERIALS FOR USE IN MAKING CARBON FIBERS" to Margraves et al., filed concurrent to the date of this Application;

United States Patent Application Serial No. 09/809,865, "CHEMICAL DERIVATIZATION OF SINGLE-WALL CARBON NANOTUBES TO FACILITATE SOLVATION THEREOF; AND USE OF DERIVATIZED NANOTUBES TO FORM CATALYST-CONTAINING SEED MATERIALS FOR USE IN MAKING CARBON FIBERS" to Margraves et al., filed concurrent to the date of this Application;

United States Patent Application Serial No. 09/810,150, "CHEMICAL DERIVATIZATION OF SINGLE-WALL CARBON NANOTUBES TO FACILITATE SOLVATION THEREOF; AND USE OF DERIVATIZED NANOTUBES TO FORM CATALYST-CONTAINING SEED MATERIALS FOR USE IN MAKING CARBON FIBERS" to Margraves et al., filed concurrent to the date of this Application;

United States Patent Application Serial No. 09/810,201, "CHEMICAL DERIVATIZATION OF SINGLE-WALL CARBON NANOTUBES TO FACILITATE SOLVATION THEREOF; AND USE OF DERIVATIZED NANOTUBES TO FORM CATALYST-CONTAINING SEED MATERIALS FOR USE IN MAKING CARBON FIBERS" to Margraves et al., filed concurrent to the date of this Application.

GOVERNMENT GRANTS

This invention was made with United States Government support under United States Grant No. NAGW-4004 and Grant No. DMR-9522251 awarded by the National Aeronautical and Space Administration – Jet Propulsion Laboratory and the National Science Foundation, respectively. The United States Government may have certain rights in the invention.

19. A method for derivatizing a sidewall of a single wall carbon nanotube comprising reacting the single wall carbon nanotube with a fluorinating agent to bond fluorine to the sidewall of the nanotube.

20. The method of claim 19, wherein the fluorinating agent is selected from the group consisting of fluorine, XeF_2, XeF_4, ClF_3, BrF_3, IF_5, AgF_2, and MnF_3.

21. The method of claim 19, wherein the single wall carbon nanotube is reacted with the fluorinating agent at a reaction temperature up to about 500°C.

22. The method of claim 19, wherein the single wall carbon nanotube is reacted with the fluorinating agent at a reaction temperature between about 250°C and about 400°C.

23. The method of claim 19, wherein the amount of fluorine bonded to carbon atoms of the single wall carbon nanotube is at a fluorine to carbon ratio of from (a) one fluorine atom to about 26 carbon atoms to (b) one fluorine atom to about two carbon atoms.

24. The method of claim 23, wherein the amount of fluorine bonded to the carbon atoms of the single wall carbon nanotube is at the fluorine to carbon ratio of from (a) one fluorine atom to about ten carbon atoms to (b) one fluorine atom to about two carbon atoms.

25. The method of claim 24, wherein the amount of fluorine bonded to the carbon atoms of the single wall carbon nanotube is at the fluorine to carbon ratio of from (a) one fluorine atom to about three carbon atoms to (b) one fluorine atom to about two carbon atoms.

26. A method for derivatizing sidewalls of single wall carbon nanotubes comprising:

(i) selecting a fluorinating agent from the group consisting of fluorine, XeF_2, XeF_4, ClF_3, BrF_3, IF_5, AgF_2, and MnF_3;

(ii) reacting the single wall carbon nanotubes with the fluorinating agent at a reaction temperature up to about 500°C; and

(iii) producing single wall carbon nanotubes having fluorine covalently bonded to the sidewalls of the single wall carbon nanotubes.

27. The method of claim 26 wherein the amount of fluorine bonded to carbon atoms of the single wall carbon nanotubes is at a fluorine to carbon ratio of from (a) one fluorine atom to about 26 carbon atoms to (b) one fluorine atom to about two carbon atoms.

28. The method of claim 27 wherein the amount of fluorine bonded to the carbon atoms of the single wall carbon nanotubes is at the fluorine to carbon ratio of from (a) one fluorine atom to about ten carbon atoms to (b) one fluorine atom to about two carbon atoms.

29. The method of claim 27 wherein the amount of fluorine bonded to the carbon atoms of the single wall carbon nanotubes is at the fluorine to carbon ratio of from (a) one fluorine atom to about three carbon atoms to (b) one fluorine atom to about two carbon atoms.

30. The method of claim 26 wherein the reaction temperature is between about 250°C and about 400°C.

31. A method for derivatizing sidewalls of single wall carbon nanotubes comprising:

(i) reacting single wall carbon nanotubes with a fluorinating agent, wherein the fluorinating agent is selected from the group consisting of fluorine, XeF_2, XeF_4; ClF_3, BrF_3, IF_5, AgF_2, and MnF_3; and

(ii) producing single wall carbon nanotubes having fluorine covalently bonded to the sidewall, wherein the single wall carbon nanotubes generally have a length from about 5 nm to about 10,000 nm.

32. The method of claim 31 wherein the single wall carbon nanotubes have a length from about 5 nm to about 500 nm.

33. A method to vary the conductivity of single wall carbon nanotubes comprising the step of controlling the degree of fluorination of the carbon nanotube.

34. A single wall carbon nanotube having fluorine covalently bonded to the carbon atoms of a sidewall of the single wall carbon nanotube.

35. The single wall carbon nanotube of claim 34, wherein the amount of fluorine covalently bonded to carbon atoms of the single wall carbon nanotube is at a fluorine to carbon ratio of from (a) one fluorine atom to about 26 carbon atoms to (b) one fluorine atom to about two carbon atoms.

36. The single wall carbon nanotube of claim 35, wherein the amount of fluorine covalently bonded to the carbon atoms of the single wall carbon nanotube is at the fluorine to carbon ratio of from (a) one fluorine atom to about ten carbon atoms to (b) one fluorine atom to about two carbon atoms.

37. The single wall carbon nanotube of claim 36, wherein the amount of fluorine covalently bonded to the carbon atoms of the single wall carbon nanotube is at the fluorine to carbon ratio of from (a) one fluorine atom to about three carbon atoms to (b) one fluorine atom to about two carbon atoms.

38. The product made by the process of reacting single wall carbon nanotubes with a fluorinating agent to covalently bond fluorine to the sidewalls of the single wall carbon nanotubes.

39. The product of claim 38, wherein the fluorinating agent is selected from the group consisting of fluorine, XeF_2, XeF_4, ClF_3, BrF_3, IF_5, AgF_2, and MnF_3.

40. The product of claim 38, wherein the single wall carbon nanotube is reacted with the fluorinating agent at a reaction temperature up to about 500°C.

41. The product of claim 38, wherein the single wall carbon nanotube is reacted with the fluorinating agent at a reaction temperature between about 250°C and about 400°C.

42. The product of claim 38, wherein the amount of fluorine covalently bonded to carbon atoms of the single wall carbon nanotubes is at a fluorine to carbon ratio of from (a) one fluorine atom to about 26 carbon atoms to (b) one fluorine atom to about two carbon atoms.

43. The product of claim 42, wherein the amount of fluorine covalently bonded to the carbon atoms of the single wall carbon nanotubes is at the fluorine to carbon ratio of from (a) one fluorine atom to about ten carbon atoms to (b) one fluorine atom to about two carbon atoms.

44. The product of claim 43, wherein the amount of fluorine covalently bonded to the carbon atoms of the single wall carbon nanotubes is at the fluorine to carbon ratio of from (a) one fluorine atom to about three carbon atoms to (b) one fluorine atom to about two carbon atoms.

45. A product made by the process comprising the steps of:

(i) selecting a fluorinating agent from the group consisting of fluorine, XeF_2, XeF_4, ClF_3, BrF_3, IF_5, AgF_2, and MnF_3;

(ii) reacting single wall carbon nanotubes with the fluorinating agent at a reaction temperature up to about 500°C; and

(iii) producing single wall carbon nanotubes having fluorine covalently bonded to the sidewalls of the single wall carbon nanotubes.

46. The product of claim 45, wherein the amount of fluorine bonded to carbon atoms of the single wall carbon nanotubes is at a fluorine to carbon ratio of from (a) one fluorine atom to about 26 carbon atoms to (b) one fluorine atom to about two carbon atoms.

47. The product of claim 46, wherein the amount of fluorine bonded to the carbon atoms of the single wall carbon nanotubes is at the fluorine to carbon ratio of from (a) one fluorine atom to about ten carbon atoms to (b) one fluorine atom to about two carbon atoms.

48. The product of claim 47, wherein the amount of fluorine bonded to the carbon atoms of the single wall carbon nanotubes is at the fluorine to carbon ratio of from (a) one fluorine atom to about three carbon atoms to (b) one fluorine atom to about two carbon atoms.

49. The product of claim 45, wherein the reaction temperature is between about 250°C and about 400°C.

50. A product made by the process comprising:

(i) reacting single wall carbon nanotubes with a fluorinating agent, wherein the fluorinating agent is selected from the group consisting of fluorine, XeF_2, XeF_4, ClF_3, BrF_3, IF_5, AgF_2, and MnF_3; and

(ii) producing single wall carbon nanotubes having fluorine covalently bonded to the sidewall, wherein the single wall carbon nanotubes generally have a length from about 5 nm to about 10,000 nm.

51. The product of claim 40 wherein the single wall carbon nanotubes have a length from about 5 nm to about 500 nm.